The University of Iowa  
College of Liberal Arts and Sciences  
Department of Statistics and Actuarial Science  
ACTS:6160 (22S:171) Topics in Actuarial Science  
2:30 - 3:20 PM  MWF  150 SH  
Fall Semester 2017

Instructor: Dr. E.S.W. Shiu  
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Office Hours: 3:30–5 PM Monday and Wednesday, or by appointment  
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Prerequisites: C+ or better in 22S:181 (ACTS:4180) and 22S:183 (ACTS:4380)

Recommended textbooks:
- R.L. McDonald (2013) *Derivatives Markets*, 3rd edition, Pearson. This was a textbook for Exam FM, is the textbook for Exam MFE, and will be a textbook for Exam IFM.
- J. Berk and P. DeMarzo (2017) *Corporate Finance*, 4th edition, Pearson. This will be a textbook for Exam IFM.

Various journal papers will be distributed later.

Topics:
- Fundamental Theorem of Asset Pricing  
- Method of Esscher Transforms  
- Risk-Neutral or Equivalent Martingale Measure Pricing  
- Pricing Compound Options and Multi-Asset Options  
- Brownian Motion and Black-Scholes Equation  
- American Options; Closed-Form Formulas for the Perpetual Case  
- Adjustment Coefficient  
- Barrier Options and Their Use in Modeling Policy Lapses and Surrenders  
- Interest Rate Risk Management, Redington's Theory of Immunization and its Generalization  
- Applications to Insurance/Annuity Products: SPDAs, Variable Annuities, Equity-Indexed Annuities, Fair Value of Liabilities, Reserving Issues

There will be two Friday evening midterm exams, October 6 (Friday) and November 16 (Thursday), 6:30 to 8:30 pm. You are to use an official SOA calculator.

Tentatively, the final grade (H.W. 8% + Exams 28% + 28% + 36%) will be assigned as follows: C−[59.5, 64); C[64, 68.5); C+[68.5, 73); B−[73, 77.5); B[77.5, 82); B+[82, 86.5); A−[86.5, 91); A[91, 95.5); A+[95.5, 100]
Administrative Home
The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall, or see the CLAS Academic Policies Handbook at https://clas.uiowa.edu/students/handbook.

Electronic Communication
University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondences (Operations Manual, III.15.2, k.11).

Accommodations for Disabilities
The University of Iowa is committed to providing an educational experience that is accessible to all students. A student may request academic accommodations for a disability (which includes but is not limited to mental health, attention, learning, vision, and physical or health-related conditions). A student seeking academic accommodations should first register with Student Disability Services and then meet with the course instructor privately in the instructor's office to make particular arrangements. Reasonable accommodations are established through an interactive process between the student, instructor, and SDS. See https://sds.studentlife.uiowa.edu/ for information.

Nondiscrimination in the Classroom
The University of Iowa is committed to making the classroom a respectful and inclusive space for all people irrespective of their gender, sexual, racial, religious or other identities. Toward this goal, students are invited to optionally share their preferred names and pronouns with their instructors and classmates. The University of Iowa prohibits discrimination and harassment against individuals on the basis of race, class, gender, sexual orientation, national origin, and other identity categories set forth in the University’s Human Rights policy. For more information, contact the Office of Equal Opportunity and Diversity, diversity@uiowa.edu, or visit diversity.uiowa.edu.

Academic Honesty
All CLAS students or students taking classes offered by CLAS have, in essence, agreed to the College's Code of Academic Honesty: "I pledge to do my own academic work and to excel to the best of my abilities, upholding the IOWA Challenge. I promise not to lie about my academic work, to cheat, or to steal the words or ideas of others; nor will I help fellow students to violate the Code of Academic Honesty." Any student committing academic misconduct is reported to the College and placed on disciplinary probation or may be suspended or expelled (CLAS Academic Policies Handbook).

CLAS Final Examination Policies
The final examination schedule for each class is announced by the Registrar generally by the fifth week of classes. Final exams are offered only during the official final examination period. No exams of any kind are allowed during the last week of classes. All students should plan on being at the UI through the final examination period. Once the Registrar has announced the date, time, and location of each final exam, the complete schedule will be published on the Registrar's web site and will be shared with instructors and students. It is the student's responsibility to know the date, time, and place of a final exam.

Making a Suggestion or a Complaint
Students with a suggestion or complaint should first visit with the instructor (and the course supervisor), and then with the departmental DEO. Complaints must be made within six months of the incident (CLAS Academic Policies Handbook).

Understanding Sexual Harassment
Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI Office of the Sexual Misconduct Response Coordinator for assistance, definitions, and the full University policy.

Reacting Safely to Severe Weather
In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the Department of Public Safety website.